

## Tests for Non-Correlation of Two Infinite-Order Cointegrated Vector Autoregressive Series

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### Abstract

We propose two approaches for testing non-correlation between the innovations of two nonstationary possibly cointegrated vector processes, in the general case where the processes have infinite-order autoregressive representations. The first approach is based on cross-correlation matrices, while the second approach uses partial cross-correlation matrices. We show that, under the hypothesis of non-correlation, residual cross-correlation matrices follow the same asymptotic Gaussian distribution as the corresponding cross-correlation matrices based on the true innovations, and similarly for partial cross-correlations. Portmanteau tests based on both type of residual cross-correlations are derived. A simulation study is presented to investigate the finite sample properties of the proposed tests.

**Keywords:** Infinite-order cointegrated vector, partial cross-correlations, test of non-correlation, portmanteau statistics, bootstrap.

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